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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/809,440	03/15/2001	Gareth Hougham		4926

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EXAMINER
FONTAINE, MONICA A

ART UNIT	PAPER NUMBER
1732	6

DATE MAILED: 07/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/809,440	HOUGHAM, GARETH	
	Examiner	Art Unit	
	Monica A Fontaine	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☒ Claim(s) *2 and 7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: the acronym "CTE" is never specifically defined, and there is a lack of punctuation at the conclusion of the specification.

Appropriate correction is required.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: material in Claim 7 is not discussed in the specification.

Claim Objections

Claim 2 is objected to because of the following informalities: there is a lack of punctuation at the end of the claim. Appropriate correction is required.

Claim 7 is objected to because of the following informalities: the word "method" is misspelled. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 6 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a specific elastomer reactive material, does not reasonably provide enablement for "systems" thereof. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to execute the invention commensurate in scope with these claims. The examiner recommends omitting the word "systems" from Claim 6, thus amending the claim to read as follows: "siloxane, epoxy, acrylate, polyurethane, polyphosphazine, and styrene copolymers."

Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The acronym TFT is undefined in the application and a definition is not readily apparent. Correction is required, but applicant is cautioned against insertion of new matter.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 3 recites the limitation "pattern" in regards to the making of a stamp for microcontact printing. There is insufficient antecedent basis for this limitation in the claim.

Regarding claim 4, the phrase "addition-type" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "type"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

Claims 6 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The examiner has noted the absence of the word "and" between the last and second-to-last term of the Markush group. The examiner suggests revising Claim 6 to read as follows: "...polyphosphazine, and styrene copolymers." Furthermore, the examiner suggests revising Claim 9 to read as follows: "...divinyltetramethyldisiloxane, and tetramethyldisiloxane."

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 7 is not clear as to whether the method makes a stamp or a stamped article. It is dependent on Claim 1, which is not drawn to the use of a stamp.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 is not clear as to whether the said pattern is on the stamp or is made by the stamp.

Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The chemical structure of each of the two groups, silyl vinyl and silicon hydride, is vaguely defined. Specifically, the defining of R, R', and R" on line 22 on page 12 is unclear. The examiner has assumed the following and suggests that the phrase on line 22 be corrected or reworded accordingly: R, R', and R" are methyl, phenyl, and vinyl, respectively.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 5-8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art found in the specification, in view of Kumar et al. (U.S. Patent 5,512,131). Regarding Claim 1, the instant specification states that it is known to carry out injection molding with a reactive elastomer mix (Page 4, lines 5-24) to make a stamp for microcontact printing. The instant specification does not give details about the curing process. Kumar et al., hereafter "Kumar," teach that it is known to initially cure the reactive mix at the end use temperature (Column 18, line 62), followed by a cure period at a temperature higher than the end use temperature (Column 18, line 64). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the admitted prior art with Kumar's two-temperature cure process, thus yielding

a reaction injection molding process for making a stamp, including a curing process that takes place initially at the end use temperature and then at a temperature higher than the end use temperature in order to ensure achievement of the desired extent of curing of the stamp. Regarding Claim 2, the instant specification teaches that it is known to use a siloxane as the elastomer reactive material (Page 4, line 7), meeting applicant's claim. The instant specification does not specify the temperature at which the elastomeric reactive material cures. Regarding Claim 5, Kumar teaches that it is known to use a siloxane that is room temperature curable (Column 18, line 62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Kumar's room-temperature curable siloxane with the instant specification's injection molding process in order to simplify the curing process. The instant specification does not teach any specific kind of elastomeric reactive material. Regarding Claim 6, Kumar teaches that it is known to use an epoxy system for the elastomer reactive material (Column 8, line 35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Kumar's epoxy system material with the instant specification's injection molding system in order to create a stamp with characteristics of an epoxy system. The instant specification does not teach the scale on which a product of the claimed process is made. Regarding Claim 7, Kumar teaches that it is known to use microscopically small wiring dimensions with the registration of layers therein within microns (Column 4, line 48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Kumar's microscopically small dimensions in order to create a product of the instant specification's injection molding process that can be used in very small spaces. The instant specification does not teach the making of

an electronic pattern. Regarding Claim 8, Kumar teaches that it is known to make a microelectronic pattern using the stamp produced (Column 17, line 8). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the instant specification's injection molded stamp to make Kumar's microelectronic pattern in order to easily reproduce the pattern. The instant specification does not teach any specific kind of elastomeric reactive system. Regarding Claim 10, Kumar teaches that it is known to use Sylgard®, a polydimethylsiloxane widely-known in the art, as the siloxane system (Column 8, line 53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make a stamp using Kumar's Sylgard® as the elastomeric reactive system in the instant specification's injection molding apparatus in order to create a stamp with characteristics of Sylgard®.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art found in the specification, in view of Kumar, in further view of Kim et al. (U.S. Patent 6,355,198). The instant specification and Kumar show all the process claimed as discussed above. However, the physical nature of the elastomer during the curing process is not specified by either Kumar or the instant specification. Regarding Claim 3, Kim et al., hereafter "Kim," teach that it is known to cure the material to a fixed shape near the end use temperature (Column 10, lines 10-16), followed by hardening the material further at a higher temperature (Column 10, line 17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to carry out the process taught by the instant specification and Kumar, adding Kim's physical characteristic specifications thereto in order to ensure a desired product quality. The instant specification and Kumar do not teach any specific kind of elastomeric reactive

mix. Regarding Claim 4, Kim teaches that it is known to use a vinyl addition-type siloxane as the elastomer reactive mix (Column 11, line 66). It would have been obvious to one of ordinary skill in the art at the time the invention was made to carry out the process taught by the instant specification and Kumar, adding Kim's vinyl-addition-type siloxane thereto in order to produce a product with desired qualities characteristic of the specific elastomer mix.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over the instant specification, in view of Kumar, in further view of Kim, in further view of Sangokoya (U.S. Patent 5,731,253). The admitted prior art, Kumar, and Kim teach the basic process claimed as discussed above, however they do not teach the composition of the injected material. Sangokoya teaches that it is known to have a siloxane system containing a moiety of hexamethylcyclotrisiloxane and hexamethyldisiloxane (Column 10, line 31). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a siloxane system containing a moiety of hexamethylcyclotrisiloxane and hexamethyldisiloxane, as Sangokoya teaches, with a micromolding process to produce a stamp, as the instant specification, Kumar, and Kim teach, in order to obtain a final product having physical and chemical properties specific to the named chemical compounds.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following article is cited to further show the state of the art with respect to siloxane polymers:

"Siloxane Polymers for High-Resolution, High-Accuracy Soft Lithography." B. Michel et al. Macromolecules 33 (8), 3042-3049, 2000.

The following patents are cited to further show the state of the art with respect to elastomeric products:

U. S. Patent 4,254,069 to Dominguez et al.

U. S. Patent 4,528,354 to McDougal

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica A Fontaine whose telephone number is 703-305-7239. The examiner can normally be reached on Monday-Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jan Silbaugh can be reached on 703-308-3829. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9310 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

maf
July 22, 2002

JAN H. SILBAUGH
SUPERVISORY PATENT EXAMINER
ART UNIT 1732

07/23/02